



Federal Communications Commission
Washington, D.C. 20554

December 13, 2012

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: Measuring Broadband American Program, GN Docket No. 12-264

Dear Ms. Dortch:

On December 12, 2012, representatives of broadband providers, public interest groups, companies, and other organizations met in person and via conference call with Commission staff to discuss the Commission's 2012 broadband measurement and performance program in the Next-Generation Measurement Architecture Standardization and Outreach Group. The meeting focused on discussion of Internet Protocol Version 6 (IPv6) issues for current and next generation testing architectures.¹

James Miller, Senior Attorney Advisor EMCD, lead discussions of IPv6 measurement technical and reporting topics. Participants identified four areas of research concern and noted that Internet applications providers, manufacturers, and broadband providers were each in a position benefit from and contribute to measurements at the four points. Participants identified the first domain of possible tests could confirm the ability of consumer premise equipment to use IPv6 protocols, and the availability of IPv6 connectivity from the broadband provider. It was noted that tests conducted in this domain could contribute to identifying what portion of broadband subscribers have access to and the technical capability to utilize IPv6. Tests conducted at this point could also identify what portion of user traffic was IPv6 and Internet Protocol Version 4 (IPv4). Participants discussed that current estimates suggest that among broadband users with IPv6 connectivity, twenty percent of traffic is IPv6, and that a tracking of this statistic would be a valuable data element for the Commission or other parties.

Participants discussed that the current algorithms, including "Happy Eyeballs", used to test the availability of IPv6 stagger DNS lookups to addresses between IPv6 and IPv4 and the fastest response from either protocols is typically selected in response. It was discussed that the algorithm performs differently on different Operating System platforms and such variations could be a useful statistic.

Participants discussed that peering on IPv6 paths can vary between different Internet businesses and that the "reachability" of hosts over IPv6 was also a valuable statistic. While a consumer might have access to IPv6 connectivity from a broadband provider, testing the ability connect to various hosts over IPv6 was discussed as a valuable metric to test. In addition to the *availability*

¹ A list of attendees is attached to this filing in GN Docket No. 12-264.

and *reachability* of IPv6 hosts, the availability of *content and services* over IPv6 paths was also discussed as a valuable area for testing. Currently some large application providers provide statistics regarding the amount of total traffic served over IPv6 versus IPv4 but a measure of the availability of accessing content and services was discussed as a valuable metric.

Participants discussed that the availability of these metrics might be valuable for the Commissions' tracking of the evolution of the IPv6 transition, but would also be useful in evaluating what incentives may exist for Internet application, device, and broadband providers to move to IPv6. Understanding the availability of consumers IPv6 connectivity might influence application providers' decisions to move to IPv6, as would a carriers decisions to make IPv6 available to consumers based on the availability of application services and content.

Performance differences between IPv6 and IPv4 connections were also discussed as a topic of interest. Participants discussed that IPv6 connections have shown performance benefits for some paths because IPv4 connections that traverse carrier Network Address Translation (NAT) gateways can experience performance degradations. Participants discussed other scenarios that could influence comparative performance of IPv4 and IPv6 links, and noted that no current scientific measurements have evaluated possible differences.

As a threshold matter, participants expressed interest in IPv6 testing on the fixed platform to identify what portion of samples have IPv6 connectivity and what portion of data consumption was IPv4 and IPv6. The group agreed that further discussion of the topic would be valuable.

Staff confirmed that new schedulers for the 2013 meeting schedule for all Measuring Broadband America meetings would be announced soon but would not be announced until report drafting was finalized and a release schedule was confirmed.

Sincerely,

A handwritten signature in blue ink, appearing to read 'James Miller', is written over the signature line.

James Miller, Senior Attorney Advisor
Electromagnetic Compatibility Division/OET

Attendees

Name	Organization
Ken Koh	Adtran
Michael Bugenhagen	Centurylink
Paul Diamond	Centurylink
Marc Linsner	Cisco
Russ Guyrek	Cisco
Alec MacDonell	FCC
James Miller	FCC
Matt Mathias	Google
Shane Amante	Level3
Jim Partridge	NCTA
Thomas Gideon	New America Foundation / M-Lab
Alex Salter	SamKnows
Jason Weil	Time-Warner Cable
Lee Howard	Time-Warner Cable
Kitty O'Hara	Verizon
David Curran	Windstream